

# Notice of Allowability

Application No.

10/561,820

Examiner

Felisa C. Hiteshew

Applicant(s)

HARADA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application filed on 02/01/2007.
2. ☒ The allowed claim(s) is/are 1-3.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

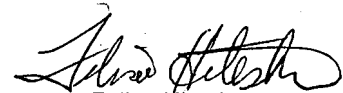
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 12/22/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



Felisa Hiteshew  
Primary Patent Examiner  
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***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

The PTOL 1449 has been received, reviewed and considered.

***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it is not in the form of one paragraph. Correction is required. See MPEP § 608.01(b).

***Allowable Subject Matter***

4. Claims 1-3 are allowed.
5. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).


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6. The following is an examiner's statement of reasons for allowance: The most relevant prior art of reference is that which was submitted by the applicant. However, it does not teach nor fairly suggest singularly or in any combination thereof a silicon single crystal pulling method comprising: arranging an upper coil and a lower coil with a predetermined gap there between in a perpendicular direction outside a chamber in which a quartz crucible is provided; generating a cusp magnetic field having an intensity of 50 gaussses or above which runs through a neutral plane between the upper coil and the lower coil by allowing opposite currents to flow through the upper coil and the lower coil; rotating the quartz crucible at a predetermined rotation speed; supplying an inert gas into the chamber from an upper part of the chamber so that the inert gas flows down in a heat shielding member provided in the chamber; rotating a silicon single crystal ingot including a top-side ingot and a bottom-side ingot from the silicon melt at a predetermined rotation speed; and pulling up the silicon single crystal ingot from a center of the heat shielding member at a pulling rate with which a perfect region where interstitial silicon point defect agglomerates and vacancy point defect agglomerates do not exist is provided in the silicon single crystal ingot, wherein the heat shielding member comprises: a cylindrical portion whose lower end is positioned above a surface of the silicon melt with a gap there between and which surrounds an outer peripheral surface of the ingot; and a bulge portion which is provided to bulge in an in-cylinder direction at a lower portion of the cylindrical portion and has a heat storage member provided therein; **wherein an inner peripheral surface of the heat storage member is formed in such a manner that a height (H1) is not smaller than 10 mm and not**

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**greater than  $d/2$  and a minimum gap (W1) with respect to the outer peripheral surface of the ingot is not smaller than 10 mm and not greater than  $0.2d$  is a diameter of the ingot and not smaller than 100 mm, and wherein a flow quantity of the inert gas flowing down between the bulge portion and the ingot when pulling up the top-side ingot of the silicon single crystal ingot is larger than a flow quantity of the inert gas flowing down between the bulge portion and the ingot when pulling up the bottom-side ingot of the silicon single crystal ingot.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

  
FELISA HITESHEW  
PRIMARY EXAMINER  
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